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ABSTRACT

The objectives of the Northern Colorado Outdoor Nature Center Project are to: (1) develop an outdoor nature center and an environmental education laboratory; (2) develop multidiscipline curriculum guides for grades K-12; (3) assist teachers in developing skills necessary tc teach effectively in the outdoor setting; and (4) develop student awareness and sensitivity to the environment and procedures for proper care of it. The middle-class community is centered in a diversified agricultural area. Mexican Americans comprise approximately 10% of the total population. Evaluation of the project was facilitated by a survey of 9 elementary principals, 140 elementary teachers, 400 elementary students, and 8 junior high teachers. The conclusions indicate that: (1) an outdoor laboratory encourages participation in environmental activities and enhances student awareness and sensitivity tc environmental problems; (2) an environmental curriculum guide provides valuable teacher assistance for planning appropriate learning experiences; (3) in-service teacher training is necessary to build confidence for teaching in a different setting; and (4) an environmental education program should embrace all levels of instruction and include all subject disciplines in grades K-12. (HBC)

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FINAL REPORT

NORTHERN COLORADO OUTDOOR NATURE CENTER PROJECT

TITLE III P.L. 89-10

POUDRE SCHOOL DISTRICT R-1
FORT COLLINS, COLORADO

September, 1972

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FINAL REPORT

NORTHERN COLORADO OUTDOOR NATURE CENTER PROJECT
Title III P.L. 89-10
Poudre School District R-1
Fort Collins, Colorado

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SUMMARY
NORTHERN COLORADO OUTDOOR NATURE CENTER
Poudre R-1 School District
Fort Collins, Colorado

PURPOSES OF THE PROGRAM

The Northern Colorado Outdoor Nature Center Project had four main objectives:

1. To develop an outdoor nature center as a laboratory for environmental education experiences.

2. To develop a curriculum guide for grades kindergarten through the twelfth utilizing the multidiscipline approach. Effective guides include environmental themes, activities and resources.

3. To assist teachers in the development of skills necessary to teach effectively in the outdoor setting.

4. To develop in students an awareness and sensitivity to their environment and procedures for proper care of it.

LOCALE

The project was initiated in the Poudre R-1 School District in Fort Collins, Colorado, located in the northern part of the state. The community is centered in a diversified agricultural area with a population of approximately 45,000. The population is considered middle class with a Mexican-American ethnic group comprising approximately 10% of the population.

PROJECT ACTIVITIES

1. An 80 acre tract of land owned by Colorado State University was developed with nature trails and interpretive devices for teachers.

2. A K-12 environmental curriculum guide comprising themes, activities and instructional resources was provided for teachers. The curriculum guide includes program suggestions in all subject areas.

3. Teachers were trained in environmental education techniques. The training was designed to enhance their teaching effectiveness in environmental settings.

4. The project was designed to encourage inter-agency cooperation among educational institutions. Those agencies involved were: public schools, private schools, colleges and universities, Board of Cooperative Services, and the Department of Education.

5. Graduate students in the Forestry and Natural Resources College at Colorado State University were provided opportunities to work with teachers and students in the elementary and secondary schools.

EVALUATION

Evaluation of the project was carried out primarily through the survey of involved personnel. Administrators, teachers and students were asked to respond to questionnaires and opinionnaires and to participate in planned interviews. Teachers also supplied information about project activities through periodic reporting procedures.

CONCLUSIONS

1. An outdoor laboratory encourages participation in environmental activities and enhances student awareness and sensitivity to environmental problems.

2. An environmental curriculum guide provides valuable assistance to teachers for planning appropriate learning experiences.

3. In-service training of teachers is necessary in order to build confidence in teachers for teaching in a different setting.

4. An environmental education program should embrace all levels of instruction from kindergarten through the twelfth grade and include all subject disciplines.

RECOMMENDATIONS

1. There is a need for a special person at the school assigned to coordinate the community-wide program.

2. The school district should provide regular budget funding for increased transportation costs and instructional preparation.

3. In-service training of teachers should be continuous to take care of new teachers and new teaching demands.

4. The environmental curriculum guide should be evaluated with the prospects of revisions. New themes, resources, and techniques require constant evaluation with possible additions or deletions to the program.

FINAL REPORT

Northern Colorado Outdoor Nature Center Project
Title III ESEA
Poudre R-1 School District
Fort Collins, Colorado

DESCRIBING THE CONTEXT

The Locale

The community to be served by the project is the Poudre R-1 School District of Fort Collins, Colorado. The district is a large re-organized district in northern Colorado consisting of over 1,800 square miles of territory and including approximately 13,000 students. Approximately 10% of the student population of the district is of the minority classes, while 9% of this group is of the Mexican-American ethnic group. The district is bordered on the west by the eastern slope of the Rocky Mountains. The area is comprised of three small towns, and the city of Fort Collins. The population of the school district is approximately 60,000 while Fort Collins alone has approximately 43,100 people. Colorado State University is located in Fort Collins. There is little heavy industry in the area and, as a result of the influence of the University on the economy, the population tends to be middle class economically. The surrounding area is largely agricultural, which includes much irrigated land. Actual resources in the area includes the Rocky Mountain National Park, the Poudre River, Roosevelt National Forest and the Pawnee National Grasslands. The employment rate as reported by the Employment Service is 3.6%. The number of pupils identified as economically deprived by Title I E.S.E.A. is 1,185 or 11.46% of the student body.

The School System

The Northern Colorado Outdoor Nature Center Project served the public and private schools in the Fort Collins area. The Poudre R-1 School District includes 24 elementary schools, six junior high schools and two senior high schools. The schools have a total of 13,000 students presently enrolled. The program was also extended to the St. Joseph's Parochial School which provides a K-6 program for 700 students. The project was extended to the University of Northern Colorado Lab School in its second year for curriculum development and in-service training.

During the last year of the project the program was extended to the schools of the neighboring community of Loveland, Colorado, for similar purposes. It should also be noted that the facilities and program was also extended to numerous community organizations such as the Girl Scouts and Boy Scouts.

The district supports the local school system quite adequately. The average income is above the state average and boasts a reasonably full employment record. At the present time the average per pupil ADA expenditures for education is $473.18. It should be noted that district support for special programs has been restricted some during the past fiscal year. Some programs including teacher aides were reduced in scope.

SPECIAL FACTORS

Needs Assessment

Prior to the district's knowledge of available E.S.E.A. funds, Fort Collins teachers and administrators were generally aware of limitations of the environmental education program in the local schools. Initial discussion held among key personnel in curriculum development indicated that very few children were being provided environmental education experiences outside the classroom and there was no existing curriculum plan to involve students in environmental studies. About the only activity of any consequence was a summer enrichment program in Ecology developed and implemented by Owen Smith, Poudre R-1 Science Curriculum Director, for high school students.

Assistant Superintendent Perc Schmelzer planned a series of meetings among representative teachers and administrators from the Poudre R-1 School District and consultants from Colorado State University to assess the need for improvement in the district's outdoor and environmental education program.

The initial assessment by the group indicated that the most serious need was for a facility or outdoor laboratory for environmental activities. Early mention of a nature center probably influenced the study group in identifying this need. Emphasis on curriculum planning and in-service training for teachers was to be introduced at a later date.

Historical Background

The Northern Colorado Outdoor Nature Center Project was planned jointly by personnel from the Poudre R-1 School District and Colorado State University. The proposal was prepared by Dr. Howard Bruner, Professor, Department of Education. Dr. Arthur Wilcox, Professor of Forestry and Natural Resources was a special planning consultant in preparing the proposal. The initial planning grant was approved and funded for the period April 1, 1969 to March 31, 1970. Subsequent proposals were planned and approved for 1970-71 and 1971-72.

The 80 acre tract of land where nature trails were to be developed was owned by Colorado State University prior to the initiation of the project. The Forestry College was the designated agency in charge of its disposition and arranged for its use as a primary project resource.

Meetings were held with the Poudre R-1 School Board, the principals and administrators and teacners to inform them about the project and obtain their support. The project was favorably received by all groups.

An advisory board was organized to assist with coordination activities. See Appendix 1 . Members from representative community and state agencies were named to the board. The Advisory Board was appointed by the project director.

EXPLAINING THE PROGRAM

Scope of the Program

The purpose of the program was to develop a comprehensive environmental curriculum, design an outdoor laboratory and train teachers to implement the program. The project was designed to help students become aware of their physical and biological world and become more sensitive to significant interrelationships. Ultimately, the goal of the program was to develop citizens better prepared to take care of the world they live in.

Even though the Nature Center is located near Fort Collins and the Environmental Curriculum was designed by teachers in the local schools, the project was designed to be used by other school districts in Northern Colorado.

The project was directed toward K-12 involvement which included the 13,000 students from the Poudre R-1 district and about 1,000 parochial school students. The exemplary idea of the project was demonstrated during the final year of the project when the Thompson R-2 district in Loveland was involved.

It should be noted that the program included all subject areas and was not restricted to science education.

PERSONNEL

Classroom Personnel

The project worked with teachers in all schools and in all grades in the Poudre R-1 School District and the St. Joseph's Catholic School. During the last two years of the project, teachers from the Thompson R-2 district participated on a limited basis with curriculum work and in-service training. The project was designed to help teachers presently on the job integrate effective environment activities into the existing educational program.

About 250 teachers from the Ft. Collins Poudre R-1 School District, 50 teachers from the Loveland Thompson R-2 District and 10 teachers from the St. Joseph's Parochial School were involved in the in-service training program. All teacher participation was on a voluntary basis.

Administrative Staff

A director of the project was assigned half time for the first two years of the project. His duties were reduced to one-third time for the final year in an effort to obtain more of a commitment from regular school personnel. The director was from the education department at a state university. He directed the curriculum study and the in-service training program. An associate director, from the forestry college was assigned one-fourth time to direct the facility development (Nature Center) and the pre-training of naturalists.

Two GTA's from the State University, one from the Forestry College and one from the education division were assigned to assist teachers with environmental activities such as curriculum planning and field excursions.

A regional Coordinator of Environmental Education was assigned to the project during the third year of the project. He worked through the Northern Colorado Board of Cooperative Services. He was on half-time with the project with the responsibility to extend the environmental concepts to regional schools.

An advisory council was selected from the state, regional and local levels to assist in the implementation of the program. One of the unique aspects of this project was the cooperation of public and private school agencies, colleges and universities, and the State Department of Education. A Teacher's Coordinating Council was also organized. This group represented every school and grade level in the city and assisted with communication efforts.

Consultative Staff

The Poudre R-1 Science Coordinator aided in curriculum development and in-service training programs.

The State Environmental Coordinator assisted in curriculum planning, resource development and in-service training of teachers.

University personnel from CSU in Fort Collins and UNC in Greeley worked with teachers in curriculum planning, facility and resource development and in-service training of teachers and naturalists.

The Environmental Education Consultant at the State Department of Education was a curriculum and resource consultant.

PROCEDURES

Organizational Details

The Northern Colorado Outdoor Nature Center project was funded for three years. It was initiated in April 1969 and was terminated June 30, 1972. The three year program was centered around developing an outdoor laboratory, preparing an environmental curriculum, and training teachers to implement the program.

The project was directed toward the involvement of all studetns at all grade levels. It was intended that activities be centered around the use of the Outdoor Nature Center and to extend involvement to other community resources.

Activities or Services

The first step of the project was obtaining support from the Poudre R-1 personnel. Meetings were held with the Board of Education, school district administrators and classroom teachers. Goals of the program and anticipated procedures were explained to each group.

The second phase of the project was involved in curriculum planning. It was evident that an outdoor facility (Nature Center) could be properly planned only after a curriculum program was developed. Representative teachers from every school and every grade level from the Poudre R-1 School District and the St. Joseph's School were selected to help with the curriculum guide. Teachers were selected on the basis of registered interest in environmental education.

Teachers met for a summer workshop and regular meetings during the first year to prepare the curriculum guide. They were assisted by consultants from the district, Colorado State University and University of Northern Colorado, and the State Department of Education. The culmination of their efforts was a K-12 Curriculum Guide with suggested themes, concepts, activities and resources for teachers to utilize. Appropriate themes were selected for all grade levels.

Almost simultaneously with the development of the guide were the efforts to prepare a plant, animal and soil inventory of the Nature Center. Ideas for interpretation and use of the Nature Center were established. About four miles of trails were marked for interpretation and study.

The second year of the project stressed the development of an in-service training program for teachers. A summer workshop was planned jointly by the Colorado State University and project personnel for teachers from Poudre R-1 and St. Joseph's School. A workshop in the fall was also organized for all teachers in the kindergarten, second, fourth and sixth grades. Limited funding restricted the training program to selected grades. Teachers from the district junior and senior high schools were also included in the training program. Special sessions were held for teachers of math, English, social studies and science.

The training program was designed to acquaint teachers with the Outdoor Nature Center, familiarize them with the recently developed curriculum guide and to help them plan appropriate activities outside of the classroom.

During the training year the curriculum guide was used on a pilot basis. Selected themes were implemented to determine the appropriateness of selected activities and the usefulness of the guide. During the second year project personnel, with the help of suggestions from teachers, prepared an Environmental Activity Booklet for outdoor activities. The Activity Booklet provided teachers with detailed plans for environmental experiences that could be conducted at school or at the Nature Center.

Prior to the final year of the project, a second summer workshop was planned at Colorado State University for local and regional teachers. (A schedule of the workshop is included in the Appendix #2.)

The last year of the project, April 1971-March 1972, was designed to implement a full scale involvement of students in the environmental education program. In-service training for teachers continued throughout the operational year. Additional preparation was provided by developing teaching techniques and appropriate ecological concepts for their students.

Concurrent with the Spring Workshop was the involvement of students in environmental studies most of which were held at the Outdoor Nature Center. Primary students were engaged in sensory activities, concepts in weather and seasons, and plant and animal behavior. Intermediate students concentrated on concepts related to soil, plant and animal classification and man's influence on his environment. At the junior and senior high school level students were involved in water quality

analysis, conservation practices, esthetic interpretation of the environment and citizens responsibilities in environmental problems.

During the involvement year, over 7,500 children participated in real environmental experiences outside of the classroom. The teachers used an array of local and regional resources from the city water sewage plant to the Rocky Mountain National Park in Estes, Colorado. (A list of resources used by teachers is included in the Appendix #3.)

During the spring of the final year of the project, another in-service training program was provided for teachers. Again the training activities stressed knowledge of plant and animal life and outdoor teaching methods appropriate for the spring season.

It should be mentioned that during the final year of the project services were extended to the neighboring Loveland district, Thompson R-2. Efforts were made to help with teacher training, orientation to the Outdoor Nature Center, and the construction of an Environmental Curriculum Guide. Considerable success was achieved on a limited budget. Over 1,000 students from Loveland visited the Nature Center during the months of April and May in 1972, not to mention numerous other activities by staff and students.

Teacher In-Service Training Techniques

1. The first step in working with teachers was group meetings with motivational overtones. Slide presentations stressed environmental problems, potential opportunities for citizenship training and suggested environmental education activities.

2. The second phase of the training program was to help teachers with curriculum planning techniques. Primary to the entire effort was the need for an environmental curriculum guide.

3. Early in the preparation program, teachers must be oriented to the physical resources available for environmental education experiences. Most of our orientation program was directed to an acquaintance with the Northern Colorado Outdoor Nature Center. The Evergreen Outdoor Lab in Jefferson County, the Rocky Mountain National Park, Horsetooth State Park, and Virginia Dale were other community resources included in the teacher training program.

4. The in-service training program was implemented by taking the teachers outdoors where they were involved in activities appropriate to the needs of their children; i.e., primary teachers participated in sensory activities; intermediate teachers worked with soils and conservation practices; English teachers wrote outdoor poetry and power verse; social studies teachers made inquiries into local historical sites. The training program actively involved teachers in educational experiences that they could use with their own students.

5. The training program was planned on the basis of homogeneous teacher groups. Teachers from the kindergarten, second, fourth and sixth grades were involved in separate and unique activities. Teachers in subject matter areas in the junior and senior high schools were also trained separately and specifically in relationship to the appropriate needs of each subject area.

6. One of the factors involved in the success of the workshop was the reimbursement for the teacher's time. The project paid for substitute teachers or reimbursed the teacher for Saturday work sessions. It should be mentioned, however, that considerable extra teacher time was donated willingly outside the school day for curriculum work and training activities.

7. The selection of consultants to work with teachers is crucial. Those that train teachers must understand their classroom needs and problems. The teachers of teachers must be sensitive to learning principles and the problems involved in working with young people.

8. Workshops for teachers should be continued each year. New ideas and resources need to be conveyed to regular staff members and teachers new to the district need to be oriented to the present environmental program. Workshops should be planned for each season of the school year, fall, winter and spring.

INSTRUCTIONAL RESOURCES, EQUIPMENT AND MATERIALS

Curriculum Library

A set of environmental resource booklets and curriculum guide were obtained for teachers to use as they obtained information for their guide. Examples of materials are as follows:

Interdisciplinary Outdoor Education Handbook, Shoreline District, Seattle, Washington.

Outdoor Education Guide, Jefferson County Schools.

Carolina Conservation Curriculum Guide, Ferguson Publishing Company.

Hammerman and Hammerman, Teaching in the Outdoors. Burgess Publishing Company.

Balarat Outdoor Center Guide, Denver, Colorado.

Brown, M. Conservation Education, Burgess Publishing Company.

Stapp, William B. Integrating Conservation and Outdoor Education.

Curriculum Guide

A team of teachers planned a K-12 Environmental Curriculum Guide for the local community schools. Suggested objectives, themes, concepts, activities and resources were made for teachers and students. Teachers

used the guide to plan activities at school and at the Center. Themes for all grades and all subject areas were included. The Guides were distributed to all teachers.

Nature Center Master Plan

A Master's Thesis by John Heywood.

Activity Booklet

Teachers under the direction of project personnel developed an Environmental Activity Booklet for teachers. Teachers used the booklet to plan activities at school and at the Nature Center. Activities in the booklet are closely related to the previously developed curriculum guide.

Trail Tip Booklet

Project personnel developed a Trail Tip Booklet to assist teachers in interpreting interrelationships and interdependencies of the Outdoor Nature Center. The booklet helps teachers with the outdoor classroom without the assistance of special resource people. Booklets were distributed to all teachers.

Outdoor Nature Center

Four miles of cottonwood bottomland trails were developed for students and teachers use. An inventory of the soil and plant/animal life in the 80 acre plot was made. A master plan was developed to determine educational potential of the area.

Water testing kits

Soil testing kits

Outdoor Instructional Materials Kit

Compasses, micro vials, ropes, insect nets, field manuals, collection jars were made available for teachers and students to do field work.

Audio-visual Materials

Film-audio slides prepared by project staff: Colorado Mammals, Cottonwood Bottomland Plants, Edible Plants, Feathered Friends of Fort Collins, Horsetooth Foothills Flora, Mosses, Pawnee Buttes Grassland Ecology, Plant Succession, Life Zones, Plains to Alpine.

COMMUNITY INVOLVEMENT

Parents were informed about the project through programs presented to PTA and PTO organizations. Slide presentations describing the Outdoor Nature Center and environment activities were included. Parents were invited to accompany the children on field trips to the Nature Center and other study sites.

Programs were presented to many community organizations for the purpose of explaining project goals and activities. (i.e., Kiawanis Club, Optomist Club, University Women Club.)

Feature stories were carried by the local newspaper The Coloradoan which explained in some detail the progress of the Nature Center.

BUDGET

The total cost of the program was $114,646.00 for the three year period. Most of the cost was involved in the administration of the program. This leadership was required in much of the early planning and organization. A breakdown of expenditures is as follows:

Administration	$ 83,368.71
Instruction	26,704.10
Pupil Transportation	2,652.73
Fixed Charges	590.14
Remodeling	1,050.00
Equipment	280.32
TOTAL	$114,646.00

The cost of this project does not include the Nature Center site that was provided by the Colorado State University. Estimates of the area were in the neighborhood of $40,000.00 The school district contributed financially to the project by providing transportation for most of the field trips taken by the students and by providing facilities for the planning sessions.

REPORTING THE EVALUATION

Objectives

Education

1. Teachers will develop and refine knowledge, skills, and techniques in environmental education as a means of effectively involving students in environment related experiences.

2. Students will develop an awareness and understanding of the physical and biological world and acquire appropriate skills and procedures in caring for and using natural resources.

Program

1. To develop a K-12 environmental curriculum guide for teachers and students to use in implementing the goals of the curriculum plan.

2. To develop a Nature Center as a primary resource for teachers and students to use in implementing the goals of the curriculum plan.

3. To identify a comprehensive list of community resources presently available for schools to use in the environmental education program.

4. To prepare instructional materials in the field of environmental education to assist the teacher and students achieve determined objectives (i.e., nature trail guide, film strips, tapes, etc.).

5. To develop a plan for the construction of a Nature Center building to accommodate teachers with on site facilities and equipment necessary for teachers carrying out environmental studies.

6. To develop guidelines in order to provide for the continuation of the environmental program after project funds are removed.

EVALUATION DESIGN

The purpose of this section of the report is to describe the procedures for obtaining evaluative data for the Northern Colorado Outdoor Nature Center Project. The evaluation period extends from the initiation of the project in April, 1969, to the final termination of the project in June, 1972.

The primary focus of the project during the first year was directed toward the development of a curriculum guide and the development of a Nature Center facility. The second year of the project concentrated on in-service training of teachers in the Poudre R-1 district. The third and final year placed emphasis on efforts to involve students, K-12, in worthy environmental education experiences at the Nature Center and other community study sites. Consequently, the focus of evaluation activity was to determine the effectiveness of the nature center facility, the curriculum guide, in-service teacher training and student participation.

The purposes of the evaluation were to:

a. Provide information about the usefulness of the environmental education curriculum guide from the teacher's point-of-view. Suggestions were to provide guidelines for future changes in the curriculum design.

b. Provide information about the adequacy of the Outdoor Nature Center and other community study areas for K-12 environmental education experiences. The information was to assist in determining the ability of teachers to use the Nature Center and other resources in carrying out suggestions made in the curriculum guide.

c. Provide information about the effectiveness of in-service training sessions in providing teachers with useful knowledges, skills and techniques in the implementation of environmental education activities. This information was necessary to guide future decisions regarding training sessions for teachers.

d. To provide information about the extent of participation by Poudre R-1 students in environmental activities resulting from the project and its influence on student attitudes.

EVALUATION INSTRUMENT

The Advisory Board for the Northern Colorado Outdoor Nature Center on the advisement of the Board of Cooperative Services decided that the most appropriate procedure for collecting data for the evaluation was by direct contact with school personnel during and at the termination of the project. During the first year of the project no formal evaluation was carried out. Progress toward achieving program objectives was evident by the completion of the nature trails on the designated 80 acre tract. A master plan describing the Nature Center and suggestions for its use was also completed during the first year. The following were the four major procedures designed to obtain information about the progress and changes resulting from the project.

1. An evaluation of in-service workshops for teachers was carried out with a pre-post administration of a questionnaire. After the completion of the curriculum guide and the nature trails it was decided that teachers would need acquaintance with both in order to use them effectively. The questionnaire focused attention on teachers knowledge and use of the Nature Center, understanding and utilizing the curriculum guide, and the value they placed on environmental concepts. The questionnaires were distributed by the building representatives in charge of coordinating project activities.

2. During the operational year, a follow-up interview with teachers was conducted to determine the extent to which teachers had used the Nature Center and instructional materials prepared by the project. A representative sample of teachers from elementary and secondary teachers from Fort Collins was interviewed. Penne Howell, a graduate student at Colorado State University, carried out the interviews under the direction of Dr. Douglas Sjogren, Northern Colorado Education BOCS evaluation consultant.

3. During the operational year, participating teachers were asked to complete a log of their environmental activities and return them to the project director. The purpose of the reporting was to get information on the variety of activities being presented and to obtain clues to problems encountered by teachers while involving students in environmental activities. The summary of the log data was made in November 1971 after the first four months of the operational year. The report was initially compiled for the Title III evaluation team on their on-site visit in November 1971.

4. Finally, a summary evaluation of the total project was carried out by the graduate research class at Colorado State University under the direction of Dr. Douglas Sjogren. The data gathering was conducted during the Winter Quarter of 1972 at the close of the formal project. Interviews with principals were conducted. Questionnaires were administered to teachers at all grade levels and in all subject areas. Opinionnaires were completed by students at selected grade levels.

Representative samples of the surveys are included in this report. Each includes an explanation of the data collection methods employed and a summary of the data.

EVALUATION OF THE TEACHER IN-SERVICE TRAINING

Initial efforts to evaluate the effectiveness of the Northern Colorado Outdoor Nature Center project were made in March 1970. Emphasis during the second year of the project was placed on the in-service training of teachers in environmental education competencies and techniques. Consequently, the evaluation of the in-service training program was conducted by administering a pre-post questionnaire to teachers planning to participate in the project. Dr. Douglas Sjogren, consultant for the Northern Colorado Board of Cooperative Services, prepared, administered and analyzed the data received through the questionnaire. A copy of the questionnaire is in Appendix 4.

Several workshops were held during the Spring of 1970. Some were one day long and others were of two days duration. The intent was that all participants would complete the questionnaire before and after the workshop. This was not accomplished, however. There were 108 participants who completed the pre-questionnaire and 65 who completed the post-questionnaire. Furthermore, there were only 38 who completed both questionnaires.

In this report selected items on the questionnaire are discussed separately. The attitude items were scored by assigning a 5 to the strongly agree response down to a 1 for the strongly disagree response. A correlated "t" test was used to test the significance of the change in means on each item for those who completed both forms.

Item 2.1 - I place much stress on the natural environment in my class.

	Pretest			Posttest			Difference	r	t
	N	$\bar{X}$	SD	N	$\bar{X}$	SD			
Total group	108	4.0	.9	64	4.2	.9			
Matched group	38	4.2	.8	38	4.3	.8	.1	.66	.88

There was strong agreement with this item on both administrations and the change from pre to post was in the desired direction although not of sufficient magnitude to be statistically significant. The results on this item suggest that the persons who attended the workshops were receptive to the content.

Item 2.2 - The curriculum guide of the Outdoor Nature Center project is very useful for me.

	Pretest			Posttest			Difference		t
	N	$\bar{X}$	SD	N	$\bar{X}$	SD			
Total group	89	3.3	.9	63	4.2	.6	.9		
Matched group	38	3.4	1.0	38	4.1	.7	.7	.07	3.44

There was change in the desired direction on this item, and the result with the matched group showed a significant change at the .01 level. Apparently the workshop was successful in demonstrating the usefulness of the curriculum guide.

Item 2.4 - Environment education has little relevance in areas like mathematics and language arts.

	Pretest			Posttest			Difference		t
	N	$\bar{X}$	SD	N	$\bar{X}$	SD			
Total group	106	2.0	.9	64	1.7	.7	-.3		
Matched group	38	3.1	.9	38	1.8	.8	-.3	.32	1.81

There was strong disagreement with this item especially on the posttest, and this was the desired effect. The "t" value for the matched group approached significance at the .05 level. Apparently, the workshop did have an influence in demonstrating the relevance of environment education to areas other than science.

Item 2.6 - I am confident of my ability in using natural phenomena to enrich my classes.

	Pretest			Posttest			Difference		t
	N	$\bar{X}$	SD	N	$\bar{X}$	SD			
Total Group	105	3.5	.9	65	3.5	.9			
Matched group	38	3.4	.8	38	3.6	.8	.2	.38	1.23

The workshops apparently were not able to effect a great deal of increase in feelings of confidence in this area. Perhaps the workshops were not long enough to really develop confidence in this area.

Item 2.7 - I feel I know enough about the Nature Center to use it well.

	Pretest			Posttest			Difference		T
	N	$\bar{X}$	SD	N	$\bar{X}$	SD			
Total group	101	2.3	1.0	65	3.2	1.0	.9		
Matched group	38	2.3	.9	38	3.3	.9	1.0	.33	5.57

This item showed the greatest change and in the desired direction. There was a significant increase in knowledge about how to use the Nature Center. The magnitude of the mean is still near the neutral level, however, and it would appear that the participants are not yet too confident about using the Nature Center properly.

On item 3.1, the intent was to determine whether the participants were cognizant of the objectives of the Nature Center. In the following table, the mean ranks for the items are presented on the pre and post administrations.

Total Group				Matched Group	
Pretest (N=105)		Posttest (N=65)		Pretest (N=38)	Posttest (N=38)
a	4.7(6)	a	4.5(5)	4.5(5)	4.4(5)
b	4.6(5)	b	4.6(6)	4.8(6)	4.8(6)
c	2.2(2)	c	2.2(2)	2.4(2)	2.3(2)
d	1.9(1)	d	2.1(1)	1.8(1)	2.2(1)
e	3.7(4)	e	4.3(4)	3.9(4)	4.1(4)
f	3.5(3)	f	3.3(3)	3.6(3)	3.1(3)

The results indicate a remarkable consistency from pretest to posttest. Furthermore, the ranks are consistent with the objective priorities of the workshops. Apparently the objectives were clear for the participants at the start of the workshops and remained so.

Item 3.2 was included to determine if the participants knew where the Nature Center was. 68% knew where it was at the start of the workshop and 91% knew where it was at the completion of the workshop. This change was statistically significant.

Item 3.3 was included to determine if the participants knew the procedures they had to follow to use the center. The responses to this item were scored 1 or 0 for right or wrong. 32% knew the procedures before the workshops and 74% knew them after the workshops; a significant change. The fact that 26% were not able to indicate the procedures after the workshops does suggest that some follow-up might be done in the form of an instruction sheet on the procedures that the teachers could have.

Item 4.0 was slightly different on the two instruments. On the pretest the participants were asked to list things they had done that were related to Environment Education. The task on the posttest was to list things they intended to do. The mean number of things listed on the pretest was 1.6 and the mean on the posttest was 2.7. No significance test was made because the items were different, but the results suggest that the workshop may have developed some ideas for doing things related to Environment Education.

Correlations were made between the background of the participants and the questionnaire items. These correlations were generally small and indicate that the workshops had little differential effect with different kinds of teachers.

Summary of the Pre-Post Questionnaire

The results of the pre- and post-workshop questionnaires indicate that the workshops did have a desired effect on the participants' feelings about the curriculum guide, relevance of environmental education, knowledge of the Nature Center, and the seriousness of the crisis. The workshops also were effective in teaching the procedures for using the Nature Center. These results are quite encouraging considering the brevity of the workshops.

The results do also indicate, however, that some of the objectives of the workshops may not have been as strong as desired and that some follow-up activity may be desirable to stabilize or even increase the magnitude of the effect.

TEACHER INTERVIEW SURVEY

In October 1971 a follow-up study was conducted to obtain additional information from teachers on the effectiveness of the in-service training program and the readiness expressed by teachers to participate in the environmental education program.

A representative sample of teachers was selected from the Fort Collins schools and interviewed by Penne Howell, Northern Colorado Education BOCS. The purpose of the interview was to determine the extent to which the teachers had used the Nature Center and project materials this year. The interview was also designed to obtain information about other kinds of environmental education activities other than the Center that the teachers had used and suggestions for the project. A sample of the interview format is included in the Appendix.

Twenty-seven teachers were interviewed. Twenty were elementary teachers, five were junior high, and two were high school teachers. The junior high and high school teachers all taught science. One of the elementary teachers was a special education teacher. Four of the teachers had not attended any of the project workshops.

The results of selected items of the interviews are presented by interview item.

1a. Have you used the Nature Center this year?
Yes-11 No-15

b. Are you making plans to use it this spring?
Yes-19 Maybe-5 No-2

c. Will you use it next year?
Yes-19 Maybe-5 No-2

Comments:

The teachers who had used the Center were generally enthusiastic.

There were inhibiting factors mentioned such as: lack of restrooms, no bridge, and scheduling problems.

2. Have you used the curriculum guide of the Outdoor Nature Center project?
Yes-18 No-8

The yes responders were quite pleased with the guide although one secondary teacher felt the units were not stimulating or challenging enough. This teacher did comment, however, that the guide was a good idea source. Another teacher commented on a variance of quality of the ideas in the guide.

Several teachers indicated they had used the guide in many ways, not just for the Center. One teacher, however, who had not used the guide said that the reason was that the class had not gone to the Center. This was only one case, but it probably reflects a situation that might need attention: Teachers who lack familiarity with the total concept of the project may not recognize the intent of the guide as a resource for many situations rather than as a specific guide for the use of the Nature Center.

Most who said they had not used the guide either had not received a copy or had just received it recently.

3. What other things have you done this year that you consider to be especially relevant to environmental education?

This question elicited a large number and variety of answers. The following list is of the kinds of things that were mentioned.

Studied changes in the environment on and around the school grounds.
The SCIS curriculum
Visited parks near the schools
Visited museums in Denver
Used slates instead of paper
Clean up day on schoolgrounds and neighborhood
Field trips to Rocky Mt. National Park, Pingree Park, Red Feather Lakes, Owl Canyon, St. Vrain Nuclear Power Plant, cement plant, sewage treatment plant, foothills, mountains, CSU Poultry Science Department, CSU Atmospheric Research Center
Built terrariums, aquariums, environmental models
Used material in the Weekly Reader
Science fair
Week-long campout with 26 students
Campout of students, parents, and teachers
Posters, art work, themes on topics like pollution, weather, trees, animals
Building a small nature center on school grounds
Individual student projects
Outdoor diary
Speakers in class

4. As you think back to the workshop, what benefits, if any, did you receive from attending the workshop?

Most of the answers to this question were general like "very useful", "tremendous".

Following are some of the specific comments:

The trip to the Estes Park center was good.
Liked the dinner of native plants.
Good information on Horsetooth geology.
Learning how to tour with children.
Soil test was a good experience.
Coors trip was great.
Five persons; Turner, Paul, Hines, Bruner, and Wilcox were specifically mentioned as good.
One presentation was mentioned as bad; that on photography.

Summary of the Teacher Interview Survey

The general reaction from reading the interview protocols was that the teachers are very aware of the need for environmental education and they are doing many things in this area. Most seem to have been affected in a positive way by the Outdoor Nature Center Project. They are using the Center and the guide as intended for the most part. Furthermore, as some teachers indicated, they will become more confident and more able to

identify potentialities of the Center and the guide as they work with them. They have many useful ideas for work in environmental education.

TEACHER REPORT LOG

A third procedure for obtaining information about the effectiveness of the project was by requesting teachers to report on actual environmental education experiences that they conducted. Teachers were asked to keep a log describing environmental activities outside of the classroom. The log report form was planned to obtain data on the nature and frequency of environmental activities. The data was also to supply information on resources used and the effectiveness of the curriculum guide. A sample of the log report form is included in Appendix #6. Also, the complete summary report of the teacher report logs is found in Appendix #7. The summary of the reports was made in October which included project months of April, May, September and part of October. The summary represents approximately 50% of all environmental activities conducted by project schools. Some teachers failed to return reports and there were about 4 months of the operational year remaining.

A summary of the teacher report logs along with comments of the results follows:

A. SCHOOLS AND GRADE LEVELS REPORTING

Reports were received from 13 different elementary schools, 5 junior-senior high schools, and one outside agency. Approximately 70% of the elementary teachers reporting were from second, fourth, and sixth grade classrooms. This information reflects the emphasis of in-service training programs that worked largely with these grade levels.

Most of the participation reported by junior and senior high schools was by teachers of science and ECO classes. The visit reported by the Special Education Unit points out possible expansion of the program in the future.

B. LOCATION OF ENVIRONMENTAL RESOURCES USED BY REPORTING TEACHERS

About 50% of the activities reported were conducted at the Outdoor Nature Center. The Curriculum Guide, in-service training programs and prepared instructional aids stressed the use of the Center. Eleven other study areas were mentioned as appropriate for environmental activities. Some use was reported of the Sewage Treatment Plant, Horsetooth State Park, Rocky Mountain National Park, and other study areas. The expansion of environmental resources was encouraged through activities provided teachers in the In-service Training Program.

C. SELECTED THEMES FOR ACTIVITIES

Themes implemented by teachers heavily reflect the influence of the K-12 Curriculum Guide. 50% of the teachers reported using the K-12 Curriculum Guide. Aesthetic experiences were most frequently used by primary teachers. The Guide stresses sensory and awareness activities at the primary level. Students in the middle grades were involved most often in plant/animal behavior and conservation themes. Again, these themes are suggested in the Curriculum Guide. High School themes have centered mostly in the area of clear water and man's care and treatment of natural resources.

D. USE OF THE CURRICULUM GUIDE

About 50% of the teachers reporting indicated they used the K-12 Curriculum Guide in planning the environmental activity. Many of the teachers were taking their students to the Nature Center for the first time and were wanting to orient the students and themselves to the new study area. In such cases the Curriculum Guide may not have been necessary. It is anticipated that teachers in follow-up visits will utilize the Curriculum Guide more extensively. No information was obtained on the usefulness of the Activity Booklet and the Teacher's Guide to the Nature Trails except for volunteer information provided by teachers in the reports.

E. MAJOR PROBLEMS ENCOUNTERED BY TEACHERS IN THE ACTIVITY

1. The teachers frequently mentioned that they need more preparation in planning and carrying out the outdoor activity. (Knowledge of plants, animals, soil, rocks, and techniques)

2. The teachers felt that students often needed to be better prepared prior to the visit to make the experience more profitable.

3. Most teachers suggested that the allotted time for the activity was insufficient.

4. The teachers expressed the opinion that the groups or classes were too large and that smaller sub-groups would have improved the activity.

F. STUDENTS REACTION TO THE ACTIVITY

Teachers unanimously reported that students were highly interested and enthusiastic about the Outdoor-Environmental Program. All expressed a desire to participate in the program in the future.

G. SUGGESTIONS BY TEACHERS

1. There was an expressed need for aides or assistants to help the teacher. Large classes need to be divided into small groups for observations and experimentation.

2. Activities seemed to be too broad in scope and need to be more specific or narrowed down.

3. The Curriculum Guide should include the theme on soil, rocks and minerals for the middle grades.

4. Some teachers indicated that a pre-visit to the study area before taking the class out was an absolute necessity.

ADMINISTRATOR, TEACHER, STUDENT QUESTIONNAIRE

The final step for project evaluation was a questionnaire and opinionnaire involving principals, teachers and students. Each group was questioned

about his knowledge of the project, his involvement in and opinions about the project. In this final survey nine elementary principals, one hundred forty elementary school teachers, four hundred elementary students, and eight junior high school teachers were involved. This final evaluation survey was conducted in January, 1971.

For the final report, selected sections of the survey are included to provide a sampling of opinions from the participating personnel.

Principal Survey

Eight of the elementary schools in the Poudre R-1 School District and a parochial school in the area were selected in gathering information from elementary principals, teachers, and students. The principals were each interviewed and their responses to questions about their involvement in the ONC Project, the value of environmental education, and problems with field trips and teacher involvement in environmental education were recorded. A sample of the interview questionnaire is found in Appendix #8.

Key items in the interview are summarized:

Item 1 - How familiar are you with the Outdoor Nature Center Project?

RESPONSE:

Familiar	4
Slightly Familiar	2
Not Familiar	2

Comments: I attended the original orientation program before money was available. Have participated in in-service training and have been to the ONC. Worked with ONC Project in investigating Horsetooth. Have been to ONC twice and was affiliated with in-service. Became familiar through teacher representatives who are active. Have not been out there, but feel that I should have been. Taught summer school and became familiar with the ONC as a teacher.

Item 5 - What was you attitude toward the ONC Project at the outset?

RESPONSE:

Favorable	8
Neutral	0
Critical	0

Comments: I was sold by the teachers reaction.
Dr. Bruner was able to excite people on how important an issue the ONC is and now a natural setting is of value.
Saw the ONC as an extension of the science program.

Item 6 - Has that attitude changed now that the Project has been in operation?

RESPONSE:

Stayed the same	1
More favorable	7
Less favorable	0

Comments: A lot of hard work has gone into the Project and this makes it successful and worthwhile.
I want the students to experience the outdoors.
A child should be in nature.
I have received positive comments from teachers, students, parents.
Some parents have volunteered to take students on weekend field trips.
Has proven to be a valuable student experience.
I became more favorable when the ONC proved itself to be of value.

Item 7 - Do you think the ONC Project has been a success at your school?

RESPONSE:		
	Yes	8
	Yes, but limited success	0
	No	0

Comments: Environmental education has become part of the curriculum.
The teachers are supportive.
ONC area not used as much as it should be, but it is very successful when it is used.
All classes except the kindergarten have made use of the ONC.
Students have gone on a number of field trips and the ONC has been promoted schoolwide although the final amount of use is still up to the teachers.
All sixth grade classes went to the ONC at least two times this school year.

Item 14 - Will you run a program so that each grade will visit the Outdoor Nature Center or other area two or three times during the year?

RESPONSE:		
	Yes	6
	No	0
	Other	2 (District's responsibility; teachers prerogative)

Comments: Will make an effort for multiple visits.
Have done this somewhat this year, are planning to have each class go twice next year.
We already take kids year around to the areas adjacent to the school to illustrate growth and change.
Funds will be available and the sixth grade will visit the ONC at least twice.
Principal does not insist the teachers go to the ONC, just encourages and most classes go one or two times a year.

Item 15 - In terms of release time and overload pay, is it worth the cost to continue in-service teacher training?

RESPONSE:		
	Yes	7
	No	0
	Other	1 (Don't know)

Comments: The teachers found it very beneficial.
Very valuable! Small pay and lunch are good incentives.
The teachers should be paid as in the past.
If it is better organized, otherwise it is not worth the cost.
In-service training builds teacher enthusiasm and the teachers learn from it.
Teacher training could be improved, if the emphasis was on how to teach environmental education rather than on what the ONC is. It needs to be a methods course.
Teachers should be reimbursed.

Item 16 - Did you see any evidence of student or teacher enthusiasm toward the environmental education projects or field trips?

RESPONSE:	Teacher			Student		
		Yes	8		Yes	8
		No	0		No	0
		Other	0		Other	0

Comments: Noticed lots of discussion upon return from field trips.
The teachers vocally reported approval of the ONC and the students help keep the school grounds ecologically sound.
Some teachers followed a visit to the ONC with a unit on water pollution.
Some parents complained that there was too much emphasis on environmental education.
Enthusiasm was portrayed in projects and ideas for the school.
The Horsetooth trip was a wonderful experience. The kids were reluctant to go but 100% were enthusiastic when there.
Enthusiasm peaked after trips to Rocky Mt. National Park.

In summary, the principals seemed to be very supportive of the project. They were not heavily involved, but did not feel a need to be. Some concern was expressed that some teachers were not well-trained in the use of the ONC. One felt the training was too rapid. They all felt that environmental education is important, but they were mixed in their feelings about its relative importance. Generally, however, the principals responded very favorably to the worth of the project. Their comments suggested that the program, facility and in-service training were successful.

Teacher Survey Questionnaire

The teacher questionnaire was completed by the teaching staff at each of the nine schools surveyed. The questionnaire was designed to gather information on the teachers involvement in the Outdoor Nature Center Project and obtain teacher reactions to program, facility and training. The questionnaire and interview form are found in Appendix #9. A report on selected items in the questionnaire follows:

Item 6 - Have you had any training in environmental education?

Yes	67
No	71
No Response	1

Item 7 - Was any of your training in environmental education in connection with the Environmental Education Project (the Outdoor Nature Center Project)?

Yes	45
No	17
No Response	5

Participation in environmental education training through the ONC Project was significantly higher (1% level) for teachers in fourth, fifth, and sixth grade classrooms than for those teachers teaching all other grades.

Teacher Groups	Yes	No
Kindergarten, First, Second, and Third	17	7
Fourth, Fifth, and Sixth	26	5
All Grades	2	5

Item 11 - For each of the places you have gone, indicate the adequacy of the place for handling your class. Think in terms of resources, facilities, and service.

Facility	Inadequate	Adequate	Very Adequate
Nature walks on or near the school grounds	10	54	14
Outdoor Nature Center	3	32	23
Horsetooth	0	7	5
Grasslands	0	1	1
Rocky Mountain National Park	0	3	9
Other (includes museums, sewage plant, and the Denver Zoo)	1	15	7

The teachers ranking these facilities reported having taken their students on a total of 107 excursions during the past academic year. While nature walks on or around the school grounds were the most frequent out of the classroom activity, the Outdoor Nature Center was the most frequently visited facility in Northern Colorado requiring transporting the students to an area.

Item 12 - Have you received help in building an environmental curriculum?

Yes	60
No	68
No Response	11

The teachers, when separated into groups by the grade they teach, responded to this question in significantly (1% level) different patterns.

Grade Taught	Yes	No
Kindergarten, First, Second, & Third	24	27
Fourth, Fifth, Sixth	31	22
All Grades	25	19

Thus the teachers who teach the fourth, fifth, and sixth grade reported they had more assistance in building an environmental curriculum than the amount of assistance reported by teachers who teach the lower grades. Those teachers teaching all grades reported very little assistance in building an environmental curriculum. The project did not include training for special teachers such as music and physical education at the elementary level.

Item 13 - Do you know if you have an environmental curriculum guide available for use?

Yes	92
No	39
No Response	8

Grouping the teachers by the grades they teach, those teachers who are in fourth, fifth, and sixth grade classrooms more often reported having an environmental curriculum guide available than those teachers with students in kindergarten, first, second, and third grades or those teachers with students in all grades. These results are significant at the 1% level and are reported below.

Grade Taught	Yes	No
Kindergarten, First, Second, and Third	24	27
Fourth, Fifth, and Sixth	31	22
All Grades	5	19

Item 17 - Are your students more involved now with environmental education?

Yes	85
No	5
No Response	52

Item 18 - Do your students actions reflect an improved attitude toward the environment?

Yes	83
No	1
No Response	55

Item 19 - Teacher Comments - Please feel free to offer any comments that reflect your feelings about the Outdoor Nature Center Project.

I think it is an excellent project and must be continued. We certainly need to save our environment, our natural resources, and wildlife.

The project provides a close-at-hand environment for outdoor study and is worthwhile.

The children enjoy having a place where we can just hike and enjoy nature.

Very worthwhile place to take children to observe nature. People in charge have been very cooperative.

It is a good opportunity for the children to visit the outdoors and do some different activities. However, the area is somewhat limited and also the children enjoy the mountains.

I am very pleased that a bridge has been built and that year round use can be made of it.

I think that if some stations were set up to show and explain different things it would have greater value.

Our children enjoyed their trips and found them profitable, informative, instructive, and a means of emulation for further study. The problem is the time element in a crowded curriculum.

Need to know what specific things are available. Need specific suggestions in use of a particular area. Need help in ways to utilize this.

The Nature Center is a great place to take second graders, there is a lot of variety and yet its not too big an area for them.

There is a need to make student groups smaller for effective participation.

It's great - but since I don't teach science I don't make as much use of it as I could.

I had a CSU forestry student go with my class. We need training to effectively interpret the area.

Very good. Enjoyed help from graduate students. This is a "must" for most teachers.

They need someone to supervise tours who have worked with young children before. Our tour needed to be much more general and more movement for the children.

Summary of Teacher Questionnaire

Teachers participating in the in-service activities reported general satisfaction with the training program. Teachers were oriented to the Outdoor Nature Center and they were introduced to the environmental education curriculum guide. Teachers were firmly convinced that their students were intensely interested and involved in environmental problems because of the project program.

The large number of teachers reporting that they were not trained in outdoor techniques reflects the limitations imposed by the project design. The training program included only teachers from kindergarten, second, fourth and the sixth grade.

Student Survey Opinionnaire

Since the Northern Colorado Outdoor Nature Center Project concentrated on the kindergarten, second, fourth and sixth grades at the elementary level, only the students of these grades were surveyed. Kindergarten and second grade students were interviewed in small groups while fourth and sixth grade students completed written questionnaires. The questionnaire requested the students to respond regarding their environment and school oriented environmental activities. A copy of the student opinionnaire is found in Appendix #10. The following items provide a summary of key items in the questionnaire.

Item 1 - What is the environment to you?

Fourth Grade Responses
- Outdoors, green plants, people.
- Its a place where animals and people can live together.
- Birds, animals, air, the world around me.
- Home and school.
- Beauty and nature.
- It means stop pollution.

Sixth Grade Responses
- Plants and living things around us.
- A place to live with plants and animals.
- It is the habitat in which I live.
- It is everything around us to take care of.
- Where I live.
- Our surroundings.

Item 2 - What do you think of the environment of Fort Collins?

Fourth Grade responses (n-13)	
Favorable comments	40
Critical comments	38
Mixed comments	7
Sixth Grade responses (n-203)	
Favorable comments	24
Critical comments	42
Mixed comments	101

Fourth and Sixth Grade Student Questionnaire Responses

Item 4 - What environmental activities did you participate in this school year?

Activity	Fourth Grade	Sixth Grade
Trip to ONC	125	180
Trip to City Park	64	18
Trip to Museum	35	48
Trip to sewage plant	6	17

Activity	Fourth Grade	Sixth Grade
Studied fishes or frogs	28	15
Studied the weather	120	84
Brought a plant or a picture of a plant to school	48	91
Studied about animals storing food	120	99
Studied pollution	128	40
Studied the water cycle	107	43
Learned First Aid	17	3
A Ghost Town	6	0
Rocky Mountain National Park	2	33
Other:		
Studied birds	25	25
Denver Zoo	25	
Lions Park	25	
Slides of a Ghost Town		25
Campout		30
Spring Creek	30	20
Airport		20
Bus tour of Fort Collins		20
Science Fair Projects	30	25
Studied a cow's eye	30	

Item 4 - What do you do to take care of the environment?

Fourth Grade Responses

Pick up litter.
Ride my bike.
I pick up in my yard.
Water plants.
Pick up cans around the road.

Sixth Grade Responses

I don't litter and sometimes I pick up trash.
I don't throw paper on the ground.
Don't leave junk at the river when I fish.
Pick up litter.
Tell people when they litter.

Item 5 - Do you feel you know enough about your environment?

Fourth Grade Responses

Yes	78
No	48
Other	22

Sixth Grade Responses

Yes	47
No	75
Other	15

Item 6 - Do you think adults should study the environment?

Fourth Grade Responses

Yes	60
No	53

Sixth Grade Responses

Yes	86
No	30

Summary of the Student Questionnaire

The responses on the questionnaire indicated that students have a keen interest and concern for the quality and care of the environment. However, the depth of their involvement is mostly taking care of the litter problem. More sophisticated ideas related to the control of the balance of nature and man's influence in the physical and biological interrelationships were not evident.

CONCLUSIONS

(1) An Outdoor Education Laboratory encourages participation in environmental activities and enhances student awareness and sensitivity to environmental problems. A copy of student participation during the operational year is found in Appendix #11.

(2) An Environmental Curriculum Guide provides valuable assistance to teachers for planning appropriate learning experiences. It is imperative, however, that teachers know about the guide and how to use it.

(3) In-service training of teachers is necessary for the implementation of an environmental program. This training should be continuous and staged in the fall, winter, and spring. Homogeneous grouping of teachers according to instructional levels for in-service training is invaluable.

(4) Students are extremely interested in educational activities that relate to an understanding of and care for the world in which they live.

RECOMMENDATIONS

1. There is a need to continue the in-service education program in environmental activities for new and regular teachers. Even though teachers were generally satisfied with the training they continued to register feelings of insecurity and lack of confidence in regard to teaching outdoors and at the Nature Center.

2. A full time coordinator for environmental education is needed for the Poudre R-1 School District. The task of providing continuity for planning in-service training and keeping up with new instructional resources requires the attention of special personnel.

3. There is a need for a teacher liaison committee to assist the school coordinator. Representation for the committee should come from every school in the district and every instructional level.

4. There is a continued need for the community environment advisory council. Such a council will provide assistance in obtaining cooperation from the numerous community resource agencies concerned with environmental education (i.e., Colorado State University, Colorado Department of Education, Soil Conservation Service, Forestry Service). A special effort should be made to include youth representation.

5. The school district should provide for continued funding to carry out the expansion of the environmental program. Permanent budgeting for

transportation, equipment, and teacher training is essential for future needs.

6. The curriculum guide is in need of revision in order to improve its utility for teachers. Environmental themes should be more specifically assigned to instructional levels and new resources should be added to the guide.

7. Scheduling of classes should be made more flexible. This need was most evident at the junior and senior high school level. Larger blocks of time are needed by teachers and students to carry out activities in the community.

8. There is a need for a housing facility at the Center. Such a facility would improve the flexibility and utility of the environmental education program.

9. The environmental themes and activities used in the program are exemplary in nature and could be adapted to other schools interested in the development of such a program.

10. There is a need to keep instructional groups small. One teacher with 30 students is basically ineffective except for informational instruction. A training program for teacher aides or community helpers could help solve this problem.

11. Emphasis should be continued for educational activities that are discovery and inquiry oriented. Even though information giving is important, student motivation is enhanced through involvement in discovery experiences.

12. The program should continue to reflect a multi-disciplinary approach. Even though the program is heavily oriented to science, the esthetical, political and social needs should be examined.

13. The in-service training sessions for teachers should be planned for each season of the school year. Single training sessions during the fall do not fill the needs for a teacher in the spring.

14. Efforts should be extended to teachers in the primary grades. There is still a feeling that much of the instructional program is too advanced for the lower elementary children.

15. The school district should explore the possibility of planning a pilot camping program for sixth grade students. The pilot program should provide guidelines as to possible activities, availability of resources, special training for teachers and estimated costs for such a program.

APPENDIX
SECTION

Appendix 1 "Advisory Council" deleted because of illegibility
" 2 " Schedule of Events" " " " "
" " " Suggestion Checklist" " " " "
" 3 " Community Resources" " " " "
" 7 " Periodic Summary" " " " "

OUTDOOR NATURE CENTER

Pre-workshop Questionnaire

Section 1.0

1.1 Name_____

1.2 Age_____

1.3 Sex M____F____

1.4 Grade teaching_____

1.5 Subjects teaching_____

1.6 College major_____

1.7 Year obtained bachelors_____

1.8 Number of college hours beyond bachelors_____

1.9 Number of years experience including this year_____

1.10 Did you participate in the summer workshop of the Outdoor Nature Center project? Yes____ No____

1.11 Have you worked with the Outdoor Nature Center project in any way? For example, did you help with the curriculum guide? Yes____No____

If yes, what was the extent of your involvement?_____

_____

_____

Section 2.0

Respond to the following statements by placing a check mark under the column heading that best reflects your feeling about the statement.

		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
2.1	I place much stress on the natural environment in my class.					
2.2	The curriculum guide of the Outdoor Nature Center project is very useful for me.					
2.3	Environment education should be a separate subject for study in school.					
2.4	Environment education has little relevance in areas like mathematics and language arts.					
2.5	Field trips are too often more entertaining than educational.					
2.6	I am confident of my ability in using natural phenomena to enrich my classes.					
2.7	I feel I know enough about the Nature Center to use it well.					
2.8	I intend to use the Nature Center at least once a month in my teaching.					
2.9	The curriculum is so crowded now that I don't feel I can introduce any additional content like Environment Education.					
2.10	The so-called environmental crisis is probably another fad and we should be careful about letting it affect our curriculum or teaching too much.					
2.11	Administrative procedures and my class schedule are such that I probably will not use the Nature Center.					

Section 3.0

3.1 Rank the following statements according to their importance as objectives of the Outdoor Nature Center project. Assign the numeral "1" to the objective you think is most important, the numeral "2" to the next most important, and so on until you have put the numeral "6" by the one you feel is least important.

____a. To provide materials for teaching natural science.

____b. To enrich the curriculum so as to induce better learning of the traditional subjects.

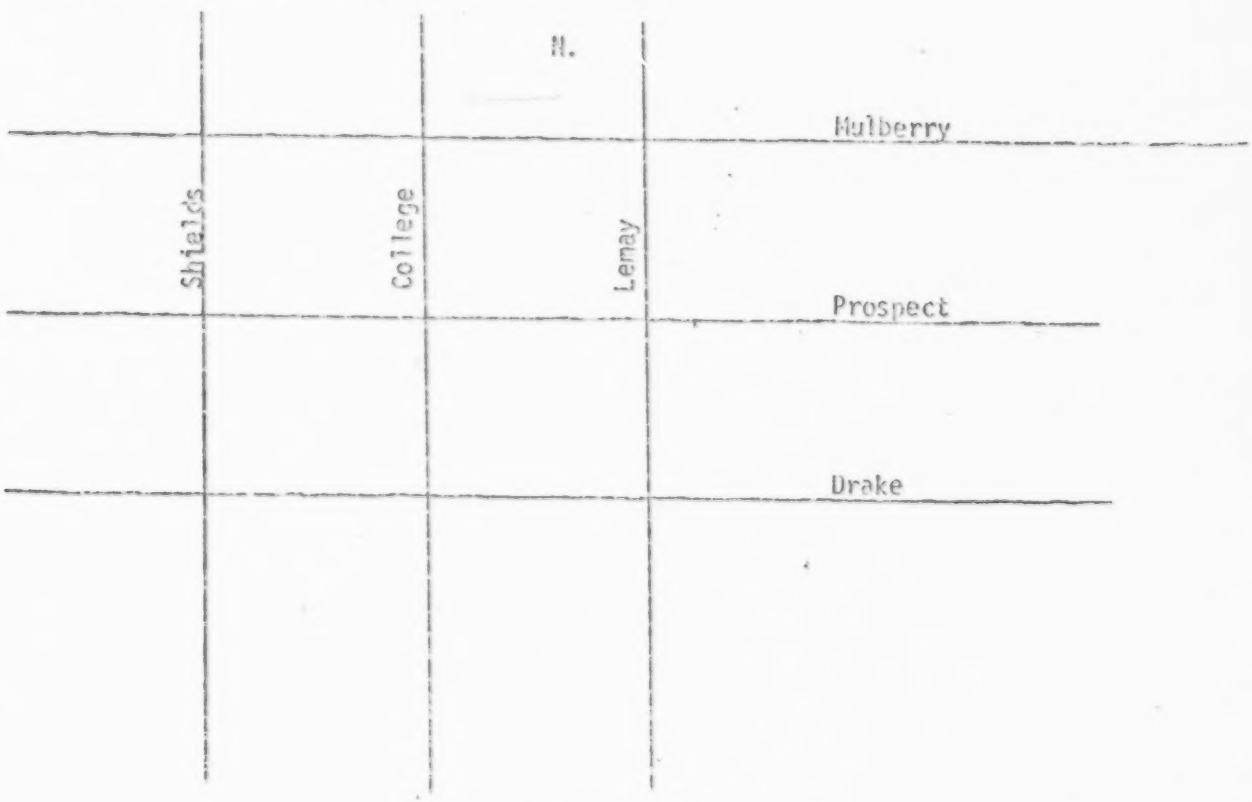
____c. To develop an understanding of the interrelatedness of aspects of the environment.

____d. To foster attitudes necessary to prevent further deterioration of the natural environment.

____e. To provide materials that take advantage of natural interests of the students.

____f. To foster an aesthetic appreciation of nature.

3.2 In the sketch below, indicate how to get to the Center from the school where you teach.



3.3 Describe the school district and Nature Center procedures that you must follow in order to use the Center for your class.

Section 4.0

List below the teaching situations of last year in which you used activities that were oriented toward Environment Education or involved the natural environment.

APPENDIX 5

TEACHER INTERVIEW INSTRUMENT

1. Have you used or do you intend to use the Outdoor Nature Center this year?

   Are you making plans to use it this spring? Next year?

   If yes, describe the ways and get judgments of the activity.

   If no, probe as to reasons. Any value there? Like it?

2. Have you used the curriculum guide of the Outdoor Nature Center project?

   If yes, describe the ways and get judgments of the units used.

   If no, probe as to reasons.

3. What other things have you done this year that you consider to be especially relevant to environmental education?

   Used other areas?

   City Park, Horsetooth, empty lots....?

   How many times have you used them?

   Are you comfortable using them?

4. As you think back to the workshop, what benefits, if any, did you receive from attending the workshop? (Ideas, speakers, materials, change of philosophy....)

5. What suggestions do you have for improving the environmental education program?

6. Whom can you call for help? (Howard Bruner, Owen Smith, Dick Paul)

Kids:

1. Heard of nature center?
2. Been there?
3. Why would you go there?
4. What did you find out there?

APPENDIX 6

OUTDOOR NATURE CENTER
Log of Environment Education Activity

1. Teacher's name _____ School _____

2. Grade level _____ Date _____

3. Location for activity _____

4. Environmental theme:

5. Type and purpose of Environmental Education Activity for situation:

6. What was the students' reaction to the activity?

7. Was the activity in the Curriculum Guide? Yes ____ No ____

7a. (If Yes to 7) Write a critique of the activity as outlined in the Curriculum Guide in terms of your experience.

8. List materials used:

9. How long was the activity?

10. Would you use this activity again? Probably Yes ____ Probably No ____

If not, why not?

If yes, what changes would you make?

INTERVIEW WITH ADMINISTRATOR

Instructions to Interviewer:

1. Give Respondent (Principal) a copy of the Interview Outline so that the short answer section of each question can be easily answered and so that they can follow along.
2. Condense and record comments on the Interview Outline as well as the responses to the short answer sections of each question.
3. After the interview is completed, give the Administrator the Opinionnaire and let them fill it out.
4. Attach Interview Outline and Opinionnaire together.

Background Information:

1. Name: Sister Ann.
2. Position: Prin.
3. How long have they held the position: 6 yrs.
4. How long have they been affiliated with the school district? _____.
5. Name of the School:: St Joseph.

RANK → 2

Opinion Score → 30

INTERVIEW OUTLINE FOR ADMINISTRATORS

1. How familiar are you with the Outdoor Nature Center Project?

   (a.) Familiar
   b.) Slightly Familiar
   c.) Not Familiar

   Comment: 2 or 3 courses

   How did you become acquainted with the Project? (Comment)

2. Were you involved in the implementation of the Outdoor Nature Center Project at your school?

   (a.) Actively involved
   b.) Somewhat involved
   c.) Not involved

   Comment: helped the teachers

   Would you like to have been more involved?

   (a.) Yes
   b.) No

   Comment (Why?): but cannot drive

3. What was your attitude toward the ONC Project at the outset? Has that attitude changed now that the Project has been in operation?

   OUTSET:
   (a.) Favorable
   b.) Neutral
   c.) Critical
   Comments:

   PRESENTLY:
   a.) Stayed the Same
   (b.) More Favorable
   c.) Less Favorable
   Comments:

4. Do you think the ONC Project has been a success at your school?

a.) Yes
b.) Yes, but limited success
c.) No

Comment: very much

5. Did you encounter any problems with environmental education or the Project at your school?

a.) Yes (If yes, then what problems)
b.) No

Enumeration of problems: 1st + 2nd grade teachers (older people) could not get them interacted. Perhaps they were fearful
Program teachers cannot be picked

6. Is environmental education important?

a.) Yes
b.) Somewhat
c.) Neutral
d.) No

Comments; helped in littering problem in school.
Made students more aware

7. How does Environmental Education rank in importance with other subjects in the curriculum?

a.) More important
b.) Equally important
c.) Less important
d.) Other (specify)

Comment: do not know, for sure, but teachers aware.
in social studies covers a lot.

8. Was anything in the curriculum cut to make room for environmental education?

a.) Yes (If yes, than what)
b.) No
c.) Other (specify)

Comment; not sure of how much
English classes — ?

9. What are the problems involved with field trips?

Check responses: a.) Scheduling
b.) Costs: 1) substitute teachers
2) bus drivers none
3) parental objections
c.) Other (specify)

Comments: transportation and problems. no bus, need parents.

10. Will you spend money on environmental materials and field trips next year?

(a.) Yes
b.) No
c.) Other (specify)

Comment: do not know how much

11. Will you run a program so that each grade will visit the Outdoor Nature Center or other area 2 or 3 times during the year? (To cover the change in seasons).

(a.) Yes
b.) No
c.) Other (specify)

Comment: 2 at most probably because of finances

12. In terms of release time and overload pay, is it worth the cost to continue in-service teacher training?

(a.) Yes
b.) No
c.) Other (specify)

Comments: teachers feel it't very beneficial

13.. Did you see any evidence of student or teacher enthusiam toward the environmental education projects or field trips?

a.) Teacher: (Yes)
No
Other (specify)

b.) Student: (Yes)
No
Other (specify)

Comment: They liked them.

#3 did not APPLY.

Opinionnaire

The following list of statements reflect certain opinions that might be held toward environmental education in general and/or the Outdoor Nature Center project. Circle the letters that best reflect your opinion about each statement using the following key.

SA - If you strongly agree with the statement
A - If you agree
NF - If you are neutral or have no feeling one way or the other
D - If you disagree
SD - If you strongly disagree

1. The most successful environmental awareness should be presented in conjunction with the school curriculum. (SA) A NF D SD

2. The emphasis that the communications media has placed on ecology has made environmental education in the schools unnecessary. SA A NF (D) SD

3. Because of lack of time, facility, guidance or training, it is difficult for me to include any environmental education in the subject matter that I teach. SA A NF D SD

4. There is no choice. Including environmental education in the school curriculum is a "life or death" necessity. SA A NF (D) SD

5. Environmental education cannot be taught effectively as a single unit. It should be an on-going experience in conjunction with all other areas of learning. SA (A) NF D SD

6. Since most of our students are exposed to TV and a wide variety of experiences outside of school, field trips, especially emphasizing the environment, are not an outstanding educational tool. SA A NF (D) SD

7. Money being spent on environmental education could be better used for other educational needs such as research and development, audio-visual aids, teachers aides. SA A NF (D) SD

8. Considering this school as it is today, if our principal had $500 added to his budget for next year, I would recommend that it be spent for district environmental education rather than for additional equipment in this building. SA (A) NF D SD

9. In the past three years, the federal government has spent my tax money, through title III, to establish the Northern Colorado Outdoor Nature Center for environmental education. I approve of this expenditure and would support my tax dollar going for similar projects. SA (A) NF D SD

Teacher Questionnaire

1.- What grade level do you teach? (check)

__K __1 __2 __3 __4 __5 __6 Other please indicate _____

2. Sex: ___M ___F

3. Age: 20-29____ 40-49____
30-39____ 50 or over____

4. Your education: Bachelors degree____
Bachelors and hours____
Master_____
Masters + _____

5. Check your content major in your bachelors program.

_____English (Language, etc)
_____Mathematics
_____Physical Sciences (Biology, physics)
_____Social sciences
_____Fine Arts (Art, music, etc.)
_____Physical education
_____Other please indicate
_____

6a. Have you had any training in environmental education?

_____Yes _____No

(If your answer is no, go on to question 7)

b. Was any of it in connection with the Environmental Education Project, i.e. the Outdoor Nature Center project? _____Yes _____No

(If your answer is no, go on to question 7)

c. Check the training activities in which you have participated in the project.

_____I helped build the curriculum guide.

_____I have been in a summer workshop.

_____I have been in an in-service workshop.

_____Other (please indicate)

7. Would you like to have training in environmental education?

_____Yes _____No

8. Indicate the extent to which environmental studies are used by you in each of the following situations? (Circle the appropriate number.)

	Seldom if ever	Once a month	Once a week	2-3 days a week	Almost daily	Not Appropriate
As a separate unit	1	2	3	4	5	0
Mathematics	1	2	3	4	5	0
Social Studies	1	2	3	4	5	0
Language Arts	1	2	3	4	5	0
Reading	1	2	3	4	5	0
Art	1	2	3	4	5	0
Physical Education	1	2	3	4	5	0
Music	1	2	3	4	5	0
Science	1	2	3	4	5	0

9. State the number of times your class has left the classroom during the specified season for environmental education. See chart below.
and

10. For each of the places you have gone, indicate the adequacy of the place for handling your class. Think in terms of resources, facilities, and service.

Fall	Winter	Spring		Inadequate	Adequate	Very Adequate
___	___	___	Nature walks on or near the school ground	1	2	3
___	___	___	Outdoor Nature Center	1	2	3
___	___	___	Horsetooth	1	2	3
___	___	___	Grasslands	1	2	3
___	___	___	Keota	1	2	3
___	___	___	Rocky Mountain National Park	1	2	3
___	___	___	Other_____	1	2	3
___	___	___	_____	1	2	3

11. Have you received help in building an environmental curriculum? ____Yes ____No

12. Do you know if you have an environmental curriculum guide available for use?
____Yes ____No If yes, which one?_____
Have you used it? ____Yes ____No

13. Does your administration support environmental education? ____Yes ____No

14. If you have been teaching in Northern Colorado for 3 or more years.
a. Are your students more involved now with environmental education? ____Yes ____No
b. Do their actions reflect an improved attitude toward environment? ____Yes ____No

15. Please feel free to offer any comments that reflect your feelings about the Outdoor Nature Center Project.

_____

_____

_____

_____

_____

Opinionnaire

The following list of statements reflect certain opinions that might be held toward environmental education in general and/or the Outdoor Nature Center project. Circle the letters that best reflect your opinion about each statement using the following key.

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1.	The most successful environmental awareness should be presented in conjunction with the school curriculum.	SA A NF D SD
2.	The emphasis that the communications media has placed on ecology has made environmental education in the schools unnecessary.	SA A NF D SD
3.	Because of lack of time, facility, guidance or training, it is difficult for me to include any environmental education in the subject matter that I teach.	SA A NF D SD
4.	There is no choice. Including environmental education in the school curriculum is a "life or death" necessity.	SA A NF D SD
5.	Environmental education cannot be taught effectively as a single unit. It should be an on-going experience in conjunction with all other areas of learning.	SA A NF D SD
6.	Since most of our students are exposed to TV and a wide variety of experiences outside of school, field trips, especially emphasizing the environment, are not an outstanding educational tool.	SA A NF D SD
7.	Money being spent on environmental education could be better used for other educational needs such as research and development, audio-visual aids, teachers aides.	SA A NF D SD
8.	Considering this school as it is today, if our principal had $500 added to his budget for next year, I would recommend that it be spent for district environmental education rather than for additional equipment in this building.	SA A NF D SD
9.	In the past three years, the federal government has spent my tax money, through title III, to establish the Northern Colorado Outdoor Nature Center for environmental education. I approve of this expenditure and would support my tax dollar going for similar projects.	SA A NF D SD

Interview questions along with teacher questionnaire.

When you have completed question 6, I would like to ask you some questions concerning in-service training.

d. What benefits did you receive from the in-service training?

_____

_____

_____

_____

e. How could the in-service training have been improved?

_____

_____

_____

_____

f. What additional training would you like to have in environmental education?_____

_____

_____

_____

Question 12 - after completion would you answer further questions.

Did you find it helpful?

Does the curriculum need improving?

If yes, how?

If you have used the OXC project curriculum guide, indicate the units you remember as being especially well done or poorly done.

Well done	Poorly done

Answer these questions upon completion of questionnaire.

What problems have you had?
i.e. provided school time for training on environmental education?

i.e. buses available for traveling to a nature study area?

i.e. areas available at your school for nature study? grounds, parks, etc.

i.e. substitutes?

Other.

STUDENT ENVIRONMENTAL ATTITUDINAL SCALE

Answer the following questions by circling what you feel to be the appropriate answer.

1. We have talked about or studied the environment in class.

   a. Frequently b. Some c. Very little d. Not at all

2. Studying nature outside the classroom is a good thing.

   a. Strongly agree b. Agree c. Undecided d. Disagree e. Strongly disagree

3. Our environment needs to be taken care of .

   a. A great deal more b. A little c. Not at all d. We worry too much about the environment

4. I talk to my family and friends about the environment.

   a. A lot b. Some c. Very little d. Not at all

5. There is really nothing my class can do about the environment.

   a. Strongly agree b. Agree c. Undecided d. Disagree e. Strongly disagree

6. There really is nothing I can do about the environment.

   a. Strongly agree b. Agree c. Undecided d. Disagree e. Strongly disagree

8. You can study the environment as well with art, music, and reading as you can with science.

   a. Strongly agree b. Agree c. Undecided d. Disagree e. Strongly disagree

9. Do you take care of the environment...

   a. A lot b. Some c. Very little d. Not at all

10. I have learned most about the environment from...

    a. School b. Home c. clubs d. T.V. e. Friends

Answer the following questions according to your own feelings and in your own words.

1. What is the environment to you?

2. What do you think of the environment in Ft. Collins?

3. What environmental activities did you participate in this school year? Check those that you participated in.

   a. Trip to the Outdoor Nature Center _____
   b. Trip to city park _____
   c. Trip to the museum _____
   d. Trip to the sewage plant _____
   e. Studied fishes or frogs _____
   f. Studied the weather _____
   g. Brought a plant or a picture of a plant to school _____
   h. Studied about animals storing food _____
   i. Studied pollution _____
   J. Studied the water cycle _____
   k. Learned first aid _____
   l. A ghost town _____
   m. Horsetooth _____
   n. Rocky Mountain National Park _____
   o. Other (List) _____

4. What do you do to take care of the environment?

5. Do you feel you know enough about your environment?

6. What would you like to learn about your environment that you haven't already learned?

7. Do you think adults should study the environment? If so, what kinds of things should be taught?

8. What things do you think you can do to improve your environment? List three:

APPENDIX II

NORTHERN COLORADO OUTDOOR NATURE CENTER PROJECT

RECORD OF ENVIRONMENTAL ACTIVITIES
OUTSIDE THE CLASSROOM

OPERATIONAL YEAR 1971-72

Month	Elem. Students	High School Students	Total*
April	358	275	1123
May	1450	420	1870
June	385	25	410
July	--	35	35
August	--	35	35
September	510	18	578
October	1321	215	1536
November	872	52	924
December	120	30	150
January	90	20	110
February	162	35	195
March	480	62	542
GRAND TOTAL			7508

*Totals do not include activities of the Thompson R-2 District Loveland, Colo.